

# Michael Bobak

Knowledge-Engineer / Research-Programmer

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San Francisco, California

[@MBstream](#)

## SUMMARY

[Research-Programmer](#) starting with physical-science simulation, adding AI study and years of [Knowledge-Engineering](#) work as well (edu/gov/com).

Focus on [Knowledge-Based](#) aids, for process improvement to [teaching](#). AI: [Knowledge-Representation and Reasoning](#), [Rules](#), [Kn-Acq](#), [NLP](#), [ML](#), ...

## SKILLS & EXPERTISE

AI [Artificial Intelligence](#) [Adaptive Systems](#) [Business Rules](#) [Case-Based Reasoning](#)

[Conceptual Modeling](#) [Data Mining](#) [Intelligent Agents](#) [Intelligent Systems](#) [Knowledge Engineering](#)

[Knowledge-based Systems](#) [Machine Learning](#) [Natural Language Processing](#) [Natural Language Understanding](#)

[Ontology Engineering](#) [Rules](#) [Semantic Web](#) [Semantics](#) [Causal Inference](#) [Composite Applications](#)

[Computational Intelligence](#) [Controlled Vocabularies](#) [Data Analysis](#) [Decision Modeling](#) [Expert Systems](#)

[Information Access](#) [Information Extraction](#) [Information Retrieval](#) [Intelligent Tutoring Systems](#)

[Knowledge Representation](#) [Logic Programming](#) [Mathematical Logic](#) [Mathematical Programming](#)

[Ontology Development](#) [Rules Engines](#) [SNOMED](#) [Semantic Search](#) [Semantic Technologies](#) [Taxonomy Development](#)

[Text Classification](#)

Science [Research](#) [Scientific Software](#) [Scientific Computing](#) [Simulation](#)

[Computational Mathematics](#) [Biophysics](#) [Computational Biology](#)

Others [Cloud Computing](#) [MapReduce](#) [Hadoop](#) [Dynamic Languages](#) [Common Lisp](#)

[other Languages](#)

## WORK EXPERIENCE

Present  
July 2011

**Freelance** *San-Francisco, CA*

consultant

Develop startup idea/s, starting with working on a ProofOfConcept for Patient DataMiningCluster patent application that I helped start at ucsf.edu

May 2011  
Oct 2010

**ApolloGrp.edu** *San-Francisco, CA*

Architect , Adaptive Learning Platform

Conceptually annotate study material & tests for automated remediation, instrument classroom to learn from use [Hadoop, Lisp, KM]

Oct 2010  
Sep 2007

**UCSF.edu** *San-Francisco, CA*

Programmer/Analyst III

Medical-Informatics [research](#) (relating to clinical-trials) in Lisp/KM, and Natural-Language-Processing in Java/etc; [paper](#) with Stanford [group](#); [ontology](#) dev/use [Lisp, KM, ..]

Sep 2007  
Feb 2001

**Freelance** *Chicago/Boston*

Knowledge-Engineer/ Reasearch-Programmer

[mindbox.com](#) 3/02-10/02. [used Art\*Enterprise] See: [Ocwen Mindbox](#) Worked upto half-time for <http://cas.dis.anl.gov> 5/03-5/04 [Java Simulation] Worked full-time 8/03--05([verizon](#))[labs.gte.com](#), Model-Based-Diagnosis on a national scale. [Art \*Enterprise] See: [aaai.org/Papers/IAAI/1996/IAAI96-287.pdf](#) Bioinformatics/control [contract](#) 11/04-12/05 [CLIPS&Protege.stanford.edu/Java/DB] Control of perfusion pumps on light microscope sample, monitoring incl. Machine-vision, Bio-ontology/reasoning/Kn-mngt for the experiment setup. & Grant proposal work. Worked for CME.com 2/06-06/06 (re)organizing trade-data validation code. [CLIPS/Jess] Signal-Processing/Machine-Learning (startup) 06/06-[Lisp/etc] Hospital Informatics/Machine-Learning ghx.com 02/07-05/07-[Lisp], MachineLearning speedup for financial-scientific [Lisp]

Feb 2001  
Jun 1998

**kbs.ai.UIUC.edu** *Urbana, IL*

(Senior) Research Programmer ([Knowledge Based Systems Lab](#))

University of Illinois Urbana-Champaign, IL Organize many levels of a very large knowledge based simulation projects. Brought over 18 programmers together to deliver a coherent product. Ran weekly (sub)group meetings, down to help solving any problem. Hiring, demo, design, install trips, prototyping to lead project direction. Taught group of 6 how to use a Rule-Based-shell for a reasoner-rewrite in Art\*Enterprise. Projects included: Simulation-based, Intelligent Tutoring System (ITS) & Real-Time control system. Being used in classroom, real life testing, presented at IAAI99 'Automated Instructor Assistant for Ship Damage Control' The system teaches Navy officers how to save a

simulated ship in crisis. A variant was developed to catch real-time crisis conditions and suggest solutions <http://www.dwilkins.org/members.htm>

Jun 1998

Oct 1996

**Brightware** *out of Chicago, IL*

Knowledge-Engineer

Helped develop and install their very first product (Intelligent email reply). Worked between development and consulting. Helped on several Knowledge-Based business applications. Helped with several deployed Knowledge-Based business applications (ie. financial: mortgage, web based job finder). [Art\*Enterprise] See: [http://www.brightware.com/eservice\\_solutions/](http://www.brightware.com/eservice_solutions/) More recently I worked 1/2 year for the new version of the company: Mindbox.

Aug 1996

Feb 1996

**Institute of Learning Sciences** *Evanston, IL*

Lead Programmer/Analyst

Wrote Lisp code (mainly GUI) for Qualitative Research Group. Learned more about Qualitative/Quantitative Simulation, Model-Based Reasoning, Intelligent-Tutoring-Systems, & general Lisp programming. See:

<http://www.qrg.northwestern.edu/projects/NSF/Cyclepad/aboutcp.htm>

Feb 1996

Feb 1993

**Argonne National Lab** *Argonne, IL*

Software Engineer ([EAD](#) then [DIS](#) groups)

Wrote fielded Expert System by myself at the end of grad-school. [in Lisp rule-shell then CLIPS] Prototyped communication & control of distributed simulation. [in CLIPS PVM etc] Agent wrapping of simulations with CLIPS+PVM, to describe then mix and match them. Also used C++/Smalltalk/FORTRAN with PVM; Other work as needed. Algo/Viz/Etc. Written up in a book about innovative distributed object application. See: [http://www.dis.anl.gov/DEEM\\_HLAsim](http://www.dis.anl.gov/DEEM_HLAsim) [http://www.dis.anl.gov/DEEM/DIAS\\_mike.bobak.googlepages.com/diaswp.pdf](http://www.dis.anl.gov/DEEM/DIAS_mike.bobak.googlepages.com/diaswp.pdf) More recently I worked part-time for the new subgroup of dis: [cas.dis.anl.gov](http://cas.dis.anl.gov).

Jan 1993

Jan 1990

**UIUC.edu** *Urbana, IL*

Graduate Research Assistant /Research Programmer

Wrote molecular graphics package used in classes & for publications. [in C] Used machine-learning techniques for protein structure prediction.

Wrote thesis on Knowledge-Based Simulation Environment. [Lisp/OPS5/C] Overseen by heads of the NCSA CompBio group and head of Biophysics at the time. see:

[web.bilkent.edu.tr/ncsa/Apps/CBdir.html](http://web.bilkent.edu.tr/ncsa/Apps/CBdir.html)

Dec 1989

Apr 1989

**[National Center for Supercomputing Applications]NCSA,Uof IL,GIST Urbana/Savoy, IL**

Programmer/Consultant

Suggested scientific software path for Software Tools Group of NCSA; Wrote molecular viz code for a professor. Wrote testing code for Global Info Systems Tech. [in C]

Apr 1989

Oct 1988

**Shearson Lehman Hutton London, England**

Programmer (Research Computing)

Maintained financial databases & daily report information. Organized worldwide mailing system. Wrote statistics code for stock predictions. [MUMPS and Maths-package]

Aug 1988

Mar 1982

**US Army Corp. of Eng. Research Lab Champaign, IL**

Research Programmer (Modeling then Acoustics teams)

Provided research support from start to finish. [FORTRAN] Wrote and ran computer simulation code, compared output with field data. Did field measurements to back up predictions. (Team/Self; Local/US/World-wide) My work went into several [published papers](#). GRASS: <http://grass.fbk.eu/>

**EDUCATION**

**University of Illinois, Urbana-Champaign**

MS Biophysics & Computational Biology with AI, 1990-93

BS Physics, BS Biophysics, 1983-88, dept. distinction

**PROFESSIONAL ORGANIZATIONS:**

[AAAI \(Association for the Advancement of Artificial Intelligence\) life-member.](#)  
[IEEE \(Institute of Electrical and Electronics Engineers\) & Computer Society 10yrs](#)  
also: [meetup.com](#), [linkedin-groups](#), & [github opensource examples](#)

**PROGRAMMING LANGUAGES/...:**

19+ years overall

Object Orientated  
[14+ years]

Rule-Based KnRep& Libs:  
Reasoning: [10+ years]:

Databases:

Operating-Systems:

C(6+ years)

[Smalltalk](#) (~1 yr)

[OPS5](#), [Prolog](#),

[Viz: OpenGL](#) (3+ yrs)

MS-Jet/SQL,

NeXTSTEP,

FORTRAN(6+ yrs)

C++(1+yr)

[GoldWorks](#)(<1yr)

[HPC: PVM](#) (1+yr)

MySQL

MS(NT..XP) (8+ yrs)

Scheme (~1 yr)  
(1/2yr)..

MUMPS  
Python(< 1yr),  
Java (1+ yr)

[CLIPS](#)(4+yrs),[\(4+yrs\)](#)

PostgreSQL,

[ORDB](#)UNIX (18+ years),  
incl.[GNU Linux](#)

[Lisp](#) (7+yrs of [CL](#)  
10+yrs of others)

[CLOS](#) [[CL](#) -Object-System]

[Knowledge-Machine](#)(3+years),  
[JESS](#)(1 yr),

[WS](#):Tomcat/Axis  
SOAP/REST

[Graph&triple persistence](#)  
&other [NoSQL](#)

[OS-X](#).Darwin(10+ years)